Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Use of Spectrum Bands Above 24 GHz For Mobile Radio Services	)	GN Docket No. 14-177
	)	
Establishing a More Flexible Framework to Facilitate Satellite Operations in the 27.5-28.35 GHz and 37.5-40 GHz Bands	)	IB Docket No. 15-256
	)	
Petition for Rulemaking of the Fixed Wireless Communications Coalition to Create Service Rules for the 42-43.5 GHz Band	)	RM-11664
	)	
Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services	)	WT Docket No. 10-112
	)	
Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz for Government Operations	)	IB Docket No. 97-95

COMMENTS OF THE
CONSUMER TECHNOLOGY ASSOCIATION F/K/A/
THE CONSUMER ELECTRONICS ASSOCIATION

I. INTRODUCTION

The Consumer Technology Association ("CTA")[1] respectfully submits these comments in response to the above-captioned *Further Notice of Proposed Rulemaking* ("*Further Notice*"),

[1] The Consumer Technology Association ("CTA")™, formerly the Consumer Electronics Association ("CEA")®, is the trade association representing the $287 billion U.S. consumer

which proposes new rules to enable mobile and unlicensed services in several bands above 24 GHz.[2] CTA applauds the Commission's many positive steps to facilitate innovative use of previously underutilized spectrum for mobile broadband and other wireless services and its effort to continue exploring spectrum for commercial use.[3] The wireless and consumer electronics industries have turned their attention to the development of standards for Fifth Generation ("5G") wireless services to meet consumer demand, and the provision of 5G-level service will require use of additional frequency bands (particularly in those places where traffic demands will be highest), in addition to the new, lower band mobile spectrum now starting to enter the pipeline.

---

technology industry. More than 2,200 companies – 80 percent are small businesses and startups; others are among the world's best known brands – enjoy the benefits of CTA membership including policy advocacy, market research, technical education, industry promotion, standards development, and the fostering of business and strategic relationships. CTA also owns and produces CES® – the world's gathering place for all who thrive on the business of consumer technology. Profits from CES are reinvested into CTA's industry services.

[2] *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014 (2016). CTA refers herein to ¶¶ 17-368 as the "*Report and Order*" and ¶¶ 369-516 as the "*Further Notice*."

[3] *See, generally*, Comments of the Consumer Technology Association f/k/a Consumer Electronics Association, GN Docket No. 14-177 (Jan. 27, 2016) (urging the Commission to adopt its proposal to create a new Upper Microwave Flexible Use Service for several bands above 24 GHz, with modifications) ("CTA NPRM Comments"); Comments of the Consumer Electronics Association, GN Docket No. 14-177 (Jan. 15, 2015) (setting forth six guiding principles for the Commission to consider when promulgating new rules for bands above 24 GHz) ("CTA NOI Comments"); Comments of the Consumer Electronics Association, ET Docket No. 15-26 (Apr. 20, 2015) (supporting the expansion of vehicular radar in the 76-81 GHz band); Comments of the Consumer Electronics Association, ET Docket No. 12-354 (Feb. 20, 2013) (encouraging the Commission to explore the possibility of spectrum sharing in the 3.5 GHz band between Federal and non-Federal users); Comments of the Consumer Electronics Association, GN Docket No. 12-268 (Jan. 25, 2013) (discussing four key principles to ensure the success of Incentive Auction); Comments of the Consumer Electronics Association, ET Docket Nos. 04-186 and 02-380 (Jan. 31, 2007) (supporting the use of fixed low-powered devices on an unlicensed basis in TV "white spaces"). For clarity, we use the name "CTA," even when previous comments were filed under the name CEA.

In the *Further Notice*, the Commission appropriately builds on the *Report and Order* and takes the next step in identifying and accommodating potential new uses for the millimeter wave ("mmW") bands above 24 GHz, including for the provision of 5G wireless services and for other evolving and innovative uses, such as the Internet of Things ("IoT"). The success of the Commission's flexible use policy demonstrates that market forces are the most appropriate mechanism for determining what technologies will best serve consumer demand. Therefore, the Commission should adopt its proposal to include the 24 GHz, 32 GHz, 42 GHz, 47 GHz, 50 GHz and 70/80 GHz bands in the newly created Upper Microwave Flexible Use Service ("UMFUS"), with some clarifications that will better enable CTA's members and others to bring innovative technologies to consumers efficiently.

II. THE MMW BANDS CONTINUE TO SHOW PROMISE FOR MEETING THE GROWING DEMAND FOR MOBILE BROADBAND

With increased consumer dependence on data-intensive applications, expanding demand for higher speeds and better connectivity, and the rapid growth of the IoT, the Commission appropriately is exploring ways to address the pressing need for more spectrum and wider bandwidths for mobile broadband.[4] Future generations of mobile service will involve multiple spectrum bands, with the network employing the most appropriate frequencies for the best delivery of a particular service. Given the progress at the 2015 World Radio Conference, now is the time to begin crafting mobile service rules in additional mmW bands.[5] As CTA previously

[4] *See* Comments of Consumer Technology Association, National Telecommunications and Information Administration Docket No. 1603311306-6306-01 at 9-10 (June 2, 2016) ("[I]mproved access to spectrum is critical to fueling the IoT"), http://1.usa.gov/1Y7tVEU; Murray Slovick, *New Wireless Options for IoT*, CTA i[3], at 12 (July/Aug. 2016) ("By 2025 30 billion IoT-connected devices will be deployed" according to Machina Research), http://mydigimag.rrd.com/publication/?i=330555#{"issue_id":330555,"page":14}.

[5] *See Further Notice*, 31 FCC Rcd at 8023 ¶ 16 (noting that the Conference directed the ITU-R to study several bands above 24 GHz); *id.* 8145 ¶ 372 ("[W]e believe it is now appropriate to seek

explained, "International harmonization is crucial to enabling the most efficient deployment of next generation technology."[6] And, other countries appear to be moving forward with technology in the bands under consideration for UMFUS as well as those above 95 GHz.[7] Ongoing and innovative experiments indicate that many mmW bands hold promise for meeting demand in heavily congested areas and can be one tool (of many) to alleviate the spectrum crunch.[8]

III. EXPANDING THE UMFUS INTO ADDITIONAL BANDS WILL INCREASE THE UTILITY OF THESE BANDS, BENEFITING CONSUMERS

The Commission's proposal to adopt service rules to include the 24 GHz, 32 GHz, 42 GHz, 47 GHz, 50 GHz and 70/80 GHz bands in the newly created UMFUS is another positive step towards increasing the efficiency of the spectrum above 24 GHz.[9] Adding flexibility to these bands – allowing licensees to provide any form of fixed or mobile service – is a key feature

---

comment on proposing mobile service rules for most of the bands identified at the 2015 World Radio Conference").

[6] CTA NOI Comments at 11; *see also id.* at i (identifying Commission participation and encouragement of global harmonization as a guiding principle for crafting rules for the bands above 24 GHz).

[7] *See, e.g.*, Comments of Marcus Spectrum Solutions LLC, GN Docket No. 14-177, at 4 (Jan. 13, 2015) ("The 2008 Beijing Olympics used a 120 GHz terrestrial link from a Japanese firm for moving HDTV imagery from various stadiums to the Olympic Broadcast Center."); *see also id.* at 5 (discussing a recent German experiment at 237 GHz that achieved a speed of 100 Gbps).

[8] *See, e.g.*, Dan Jones, *Verizon Hits 1-Gig+ in 5G Trials, Eyes Early Applications*, Light Reading 5G (Apr. 21, 2016) (reporting that Verizon was "testing equipment at 15GHz, 28GHz, 39GHz and 64GHz, using infrastructure from Ericsson AB (Nasdaq: ERIC), Nokia Corp. (NYSE: NOK) and Samsung Corp."), http://www.lightreading.com/mobile/5g/verizon-hits-1-gig-in-5g-trials-eyes-early-applications/d/d-id/722810; Comments of Wi-Fi Alliance, GN Docket No. 14-177, at 8-9 (Jan. 15, 2015) (discussing the work underway by the IEEE 802 task group "to study the development of technologies that would target the use of 100 gigabit-per-second wireless communications for a variety of applications in the 60 GHz to 300 GHz frequency range").

[9] *Further Notice*, 31 FCC Rcd at 8145 ¶ 373, 8146 ¶ 377. Accordingly, the Commission should also add a mobile allocation in the 24 GHz and 32 GHz bands to ensure flexible use in these bands. *Id.* 8148 ¶ 383, 8149 ¶ 389.

that will maximize the utility of the bands.[10] Although both the *Report and Order* and *Further Notice* set a useful foundation for service rules, certain modifications to the UMFUS will enhance its design and ultimately benefit consumers through better wireless services.

Performance Requirements. Build-out or other performance requirements should reflect the strengths and weaknesses of these specific spectrum bands.[11] For example, the performance requirements should reflect that the shorter waves in mmW bands require a much greater density of base stations than mobile broadband at the lower spectrum bands, providing a potentially inaccurate picture of actual build-out. Moreover, as the Commission notes, the traditional performance metric population coverage may be ill-fit for an IoT-type service.[12] Because CTA member companies expect to use the mmW in a variety of ways, the Commission should consider whether multiple safe harbor benchmarks best reflect the wide range of uses of mmW spectrum while "fulfilling [the Commission's] statutory obligation to encourage productive use of spectrum and avoid warehousing and speculation."[13]

Security. CTA agrees with the Commission that security, and in particular security-by-design, are important responsibilities for licensees that will operate on the newly opened spectrum. However, the Commission should not require licensees in the new bands under

[10] *See* CTA NPRM Comments at 7 (noting that, consistent with the principles CTA set forth in its Above 24 GHz NOI comments, "new rules should accommodate the entire range of possible uses for the mmW bands").

[11] *See Further Notice*, 31 FCC Rcd at 8174-75 ¶¶ 465-470 (seeking comment on performance metrics "that will better accommodate" the "new and innovative services that may develop in the millimeter wave bands").

[12] *Id.* at 8174 ¶¶ 466-467.

[13] *Id.* 8174 ¶ 465; *see also* TIA *Spectrum Frontiers* NPRM Presentation to the Federal Communications Commission June 2016, at 10 (urging the Commission to "[p]rovide multiple benchmarks, such as a safe harbor based on number of connections in the geographic service area" to "[r]ecognize[the] importance of M2M and IoT connectivity") *attached to* Letter from Dileep Srihari, Director, Legislative and Government Affairs, Telecommunications Industry Association, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177 (July 7, 2016).

consideration in the *Further Notice* to file a security statement with the Commission detailing security plans and strategies.[14] Network security is highly dynamic and function-specific, and the Commission should not risk creating vulnerabilities by enshrining certain specific protocols in security rules. Companies must have the flexibility to adjust their security strategies and respond dynamically to security needs without having to seek permission or file with the Commission.[15]

Technical Rules. Baseline technical rules such as RF safety issues and minimizing interference are appropriate. The Commission should not require the use of any particular technology on any block of spectrum but should instead stay true to its successful history of flexible use by allowing consumer needs to drive interoperability. By maintaining its technology neutral stance, the Commission will continue to promote technical innovation and a robust, competitive market.

Operability. The Commission correctly applied an "operability" requirement, rather than an "interoperability" requirement, to devices operating in the new UMFUS, and also should expressly clarify that it will not require a device to meet conflicting rules if they arise in each band.[16] Interoperability, a term the Commission uses to refer to equipment capable of operating

[14] *See Further Notice*, 31 FCC Rcd at 8145 ¶ 375 (proposing to use, generally, the licensing and service rule framework adopted in the *Report and Order*); *Report and Order*, 31 FCC Rcd at 8104-8105 ¶¶ 262-236 (requiring licensees, before they begin operations, to file statements "of their plans for safeguarding their networks and devices from security breaches").

[15] *See, e.g.*, Comments of the Consumer Electronics Association, ET Docket No. 15-170 and RM-11673, at 12 (Oct. 9, 2015) (opposing proposed security requirements in the context of equipment authorization that may hamper the ability of manufacturers to repair and address cyber-security vulnerabilities or run-of-the-mill software glitches).

[16] *Report and Order*, 31 FCC Rcd 8125 n.850 ("We use the term 'operability' here to refer to a requirement that equipment must be capable of operating across the entire band. As noted below, the term is different from 'interoperability,' which we use here to refer to equipment capable of operating across multiple interfaces.").

across multiple interfaces, could present challenges for equipment manufacturers seeking to develop technologies for bands that may have different requirements corresponding to their license type. This is particularly important in bands subject to a sharing regime, which may have varying channel widths for different segments of the band.[17]

IV. CONCLUSION

CTA's members are working diligently to ensure that the ever-increasing consumer demand for high-speed wireless connectivity is met through new products and services. The mmW spectrum holds promise as a part of the solution to meeting that demand, and CTA looks forward to working with the Commission to fully evaluate and take advantage of the opportunities presented by the mmW bands.

Respectfully submitted,

CONSUMER TECHNOLOGY ASSOCIATION F/K/A CONSUMER ELECTRONICS ASSOCIATION

By: */s/ Julie M. Kearney*

Julie M. Kearney
Vice President, Regulatory Affairs

Consumer Technology Association
1919 S. Eads Street
Arlington, VA 22202
(703) 907-7644

September 30, 2016

[17] *See* Appendix G, 31 FCC Rcd 8256 Proposed Section 30.7(d) (proposing a minimum channel width of 100 MHz for the 37-37.6 GHz Band).